Journal of the Arkansas Academy of Science

Volume 48 Article 52

1994

Status of the Endangered Gray Bat (Myotis grisescens) Hibernating Populations in Arkansas

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Sixteen bat species are endemic to Arkansas. Eight of these are cave bats, i.e., they occupy caves during all or at least part of the year (Harvey, 1986). Three Arkansas cave bat taxa are listed as endangered by both the U.S. Fish and Wildlife Service and the Arkansas Game and Fish Commission. They are *Myotis grisescens*, gray bat; *M. sodalis*, Indiana bat; and *Plecotus townsendii ingens*, Ozark big-eared bat.

I, aided by several individuals, have monitored endangered bat populations in Arkansas annually since the summer of 1978 (Harvey, 1978, 1979, 1984, 1986; Harvey and McDaniel, 1986; Harvey and Barkley, 1990; Harvey et al., 1978, 1979, 1981). The objective of this paper is to report on the current status of gray bat hibernating populations in Arkansas.

The range of the gray bat is concentrated in the cave regions of Arkansas, Missouri, Kentucky, Tennessee, and Alabama, with occasional colonies and individuals found in adjacement states (Barbour and Davis, 1969). The present total population is estimated to number ca. 1,500, 000, of which about 95% hibernate in only eight caves; two in Tennessee, three in Missouri, and one each in Kentucky, Alabama, and Arkansas.

Currently, an estimated 222,000 gray bats hibernate in four Arkansas caves; small hibernating colonies of a few hundred or less are sometimes found in a few additional caves. Although that number is 28,000 less than the 1984 estimate, it is likely that the Arkansas gray bat hibernating population has actually remained relatively stable. Gray bat hibernating colonies, especially larger colonies, are extremely difficult to estimate for several reasons. Bats may be tightly clustered, or scattered. Dense clusters are sometimes several tiers thick, and they often roost on high cave ceilings. The size and configuration of many gray bat caves also adds to the difficulty.

Bonanza Cave, located on Ozark National Forest lands in Baxter County, is one of the eight most important gray bat hibernation caves. The cave was gated in 1975 and regated in 1981 with a more suitable gate. In February 1994 the hibernating population was estimated at 165, 000. Although that number is considerably less than previous estimates of 250,000, other caves in the vicinity have shown significant increases, possibly due to movement from Bonanza Cave. A small cave located only ca. 1 km from Bonanza Cave contained an estimated 25,000 hibernating gray bats in February 1994. Prior to the winter of 1991-92, gray bats were not known to utilize this cave. Previously, usually only a few eastern pipistrelles (*Pipistrellus subflavus*) hibernated in this cave.

Prior to development by the U.S. Forest Service, Blanchard Springs Caverns in Stone County housed a gray bat hibernating colony of 5000-7000 individuals. Construction in the caverns was begun in 1963, and the cave was opened to the public in 1973. By the winter of 1978-79, the hibernating colony decreased to ca. 150 gray bats and reached a low of only 33 bats during the winter of 1985-86. Since that winter, the U.S. Forest Service has limited disturbance at the roost site, located near the natural entrance, and the bat population has increased dramatically. During the last nine winters, the population was estimated as follows: 33, 55, 188, 520, 6200, 8000, 10, 000, 18,800, and 20,000 (February 1994). The summer bachelor colony also increased to an all time high of ca. 42,000 during the summer of 1993.

Cave Mountain Cave, located on Buffalo National River lands in Newton County, houses hibernating colonies of both gray bats and Indiana bats. The greatest number of gray bats reported to hibernate in this cave prior to the winter of 1990-91 was ca. 700 during the winter of 1980-81. During the following winter (1981-82), only ca. 50 gray bats were present. To protect endangered bat colonies from disturbance, the cave was fenced during the summer of 1982 and closed to visitation during the bat hibernation period. Since the cave was fenced, the hibernating gray bat population has gradually increased to an all time high of 16,000 during the winter of 1992-93. During February 1994 the colony was estimated to number 11,700.

Thus, although the hibernating colony at Bonanza Cave may have decreased, significant increases at three other caves have kept the total Arkansas gray bat hibernating population relatively stable over the last several years. Hopefully, continued protection and management will result in removal of the gray bat from the endangered species list.

Acknowledgements

Research resulting in this publication was supported by the Arkansas Game and Fish Commission under provisions of the Federal Aid in Wildlife Restoration Act (Pittman-Robertson Act) and Section 6 of the Endangered Species Act of 1973 as amended (PL 93-205), administered by the U.S. Fish and Wildlife Service, Department of the Interior. Additional support came from the U.S. Forest Service, Ozark National Forest, and National Park Service, Buffalo National River.

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